

15 pull-out charts



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FINAL

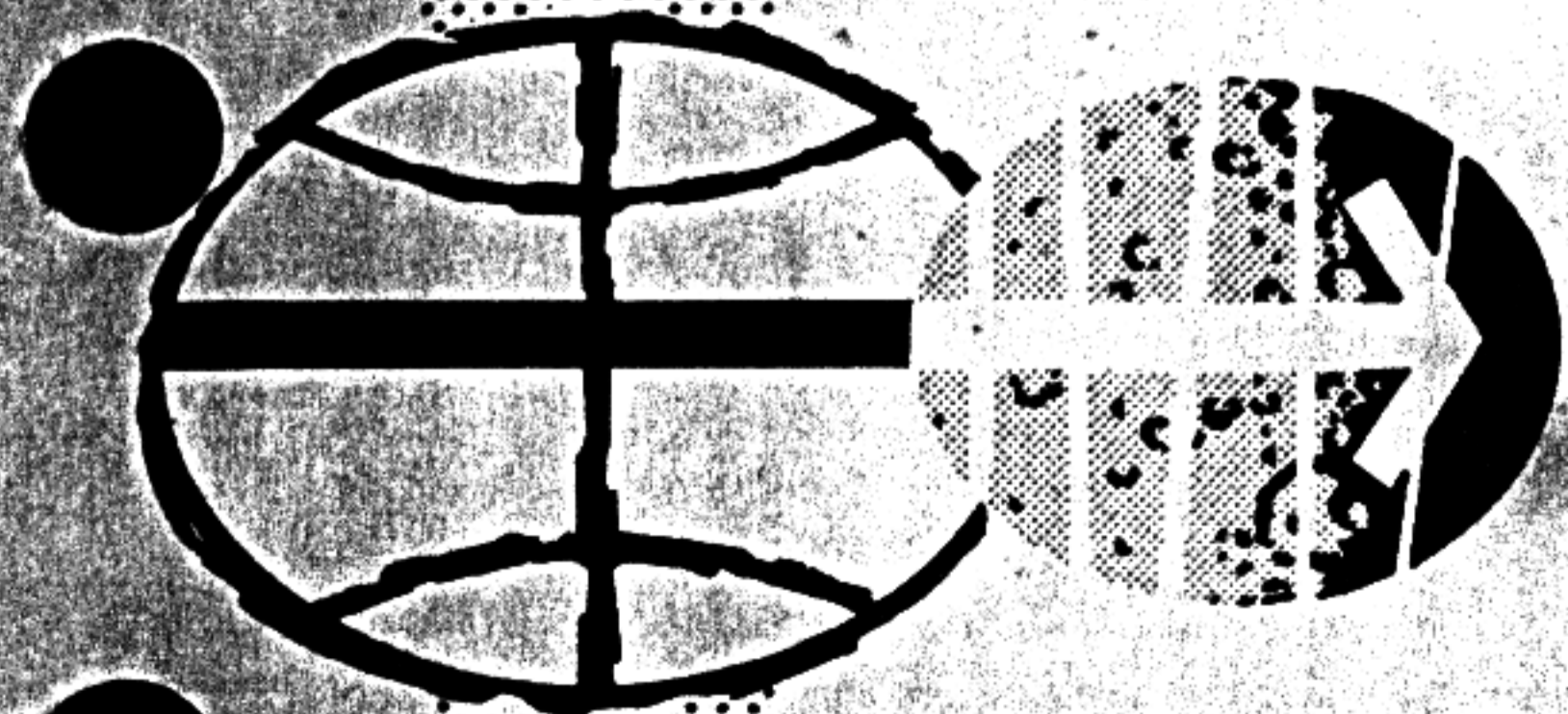
APOLLO 12 FLIGHT PLAN

AS-507 / CSM-108 / LM-6

OCTOBER 15, 1969

FLIGHT PLANNING BRANCH FLIGHT CREW SUPPORT DIVISION

MANNED SPACECRAFT CENTER HOUSTON, TEXAS



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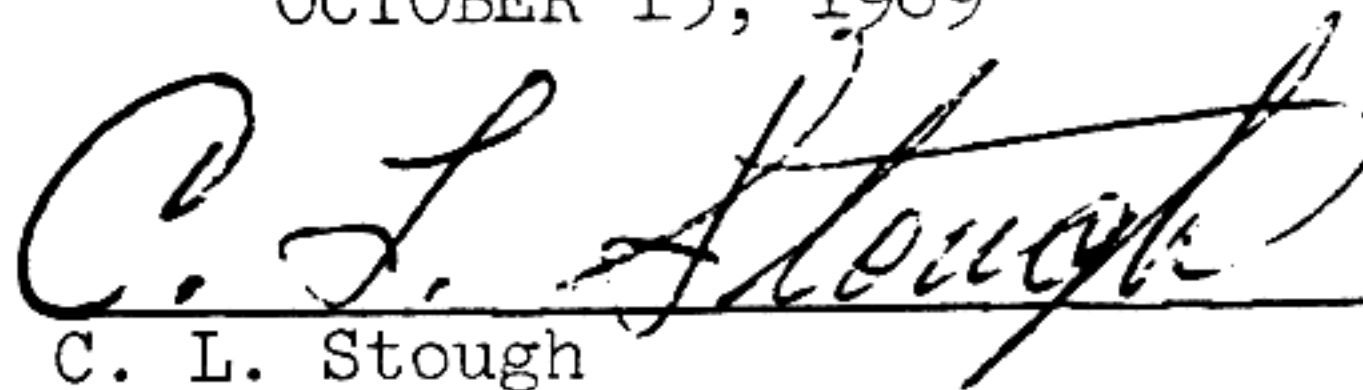
SECTION VI

APOLLO 12
APOLLO AS-507/CSM-108/LM-6

FINAL FLIGHT PLAN

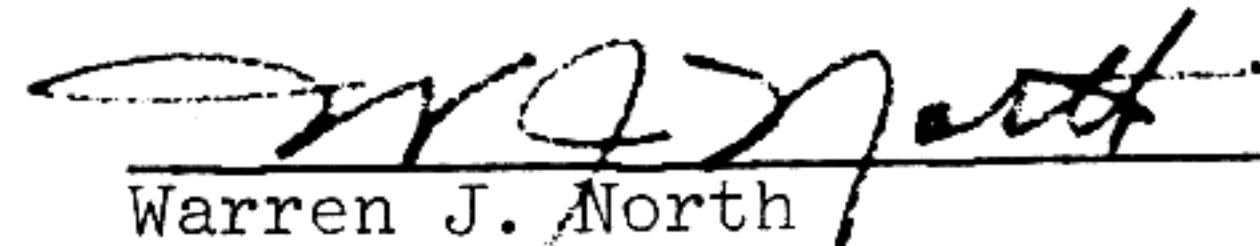
OCTOBER 15, 1969

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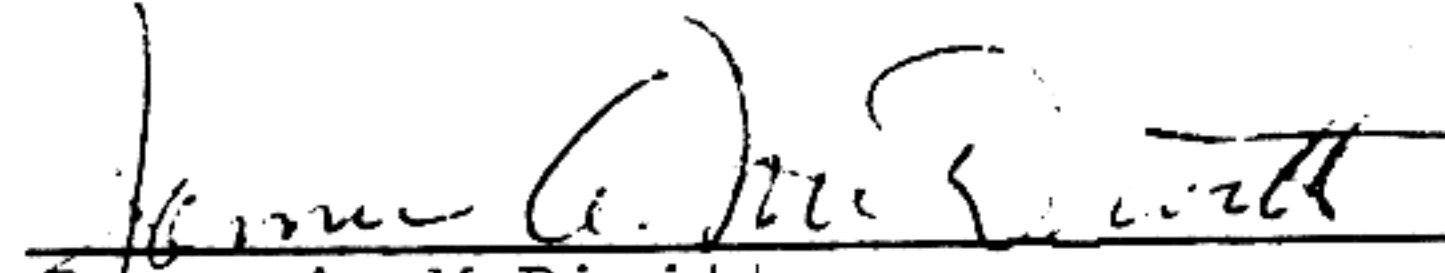


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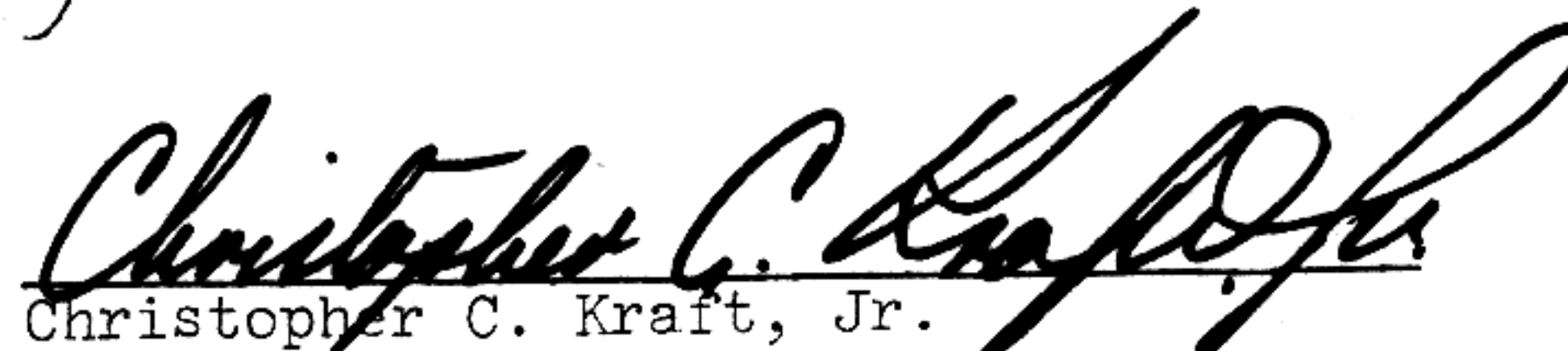


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INTRODUCTION

This Flight Plan has been prepared by the Flight Planning Branch, Flight Crew Support Division, with technical support by TRW Systems.

This document schedules the AS-507/CSM-108/LM-6 operations and crew activities to fulfill, when possible, the test objectives defined in the Mission Requirements, H Type Mission Lunar Landing, Change B dated October 14, 1969.

The trajectory parameters used in this Flight Plan are for November 14, 1969 launch, with 72° launch azimuth and were supplied by Mission Planning and Analysis Division as defined by the Apollo Mission H-1 Spacecraft Operational Trajectory to be published.

The Apollo 12 Flight Plan is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes to this document that fall in the following categories should be submitted to the CPCB via a Crew Procedures Change Request:

1. Items that impose additional crew training or impact crew procedures.
2. Items that impact the accomplishment of Mission Objectives.
3. Items that result in a significant RCS or EPS budget change.
4. Items that result in moving major activities to a different activity day in the Flight Plan.
5. Items that require a change to the flight data file.

The Chief, Flight Planning Branch (FCSD) will determine what proposed changes fall in the above categories.

Mr. C. L. Stough will act as co-ordinator for all proposed changes to the Apollo 12 Flight Plan.

This Flight Plan is not to be reproduced without the written approval of the Chief, Flight Crew Support Division.

Any requests for additional copies or changes to the distribution lists of this document must be made in writing to Mr. W. J. North, Chief, Flight Crew Support Division, MSC, Houston, Texas.

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Views of the earth shown in the Flight Plan were taken from the document, "Views from the CM and LM during the Flight of Apollo 12 (Mission H-1)."

The CSM and LM attitude information was taken from the document, "Operational Lunar Orbit Attitude Sequence for Apollo 12 (Mission H-1)" to be published.

ABBREVIATIONS

ACCEL	Accelerometer
ACN	Ascension
ACT	Activation
ACQ	Acquisition or Acquire
AEA	Abort Electronics Assembly
AGS	Abort Guidance Subsystem
AH	Ampere Hours
ALSCC	Apollo Lunar Surface Close-up Camera
ALSEP	Apollo Lunar Surface Experiment Package
ALT	Altitude
AM	Amplitude Modulation
AMP or amp	Ampere
AMPL	Amplifier
ANG	Antigua
ANT	Antenna
AOH	Apollo Operations Handbook
AOS	Acquisition of Signal or Acquisition of Site
AOT	Alignment Optical Telescope
APS	Ascent Propulsion Subsystem
ARS	Atmosphere Revitalization System
ASC	Ascent
A/T	Alignment Technique
ATT	Attitude
AUX	Auxiliary
AZ	Azimuth
BAT	Battery
BD	Band
BDA	Bermuda
Bio	Bio-Medical Data on Voice Downlink
BP	Barber Pole
BRKT	Bracket
BT	Burn Time
BU	Backup
BW	Black & White (Film 3400)
BW1	Black & White (Film 3401)
CAP COM	Capsule Communicator
CAL †	Calibration Angle
CAM	Camera
CAN	CANISTER
CB	Circuit Breaker
CCIG	Cold Cathode Ion Gage
CDH	Constant Delta Altitude
CDR	Commander
CDU	Coupling Data Unit

CEX	Color External Photography
CIN	Color Internal Photography
CIRC	Circularization
CK	Check
C/L	Centerline or Checklist
CM	Command Module
CMC	Command Module Computer
CMD	Command
CMP	Command Module Pilot
CNTL	Control
C/O	Check out
COAS	Crew Optical Alignment Sight
COMM	Communications
CONFIG	Configuration
COMP	Compare
CONT	Continue and Contingency
CP	Control Point
CRO	Carnarvon, Australia
CRYO	Cryogenic
CSC	Contingency Sample Collection
CSC	Close-up Stereo Camera
CSI	Coelliptic Sequence Initiation
CSM	Command Service Module
C&WS	Caution and Warning System
CWEA	Caution and Warning Electronic Assembly
CYI	Grand Canary Island

DAC	Data Acquisition Camera
DAP	Digital Auto Pilot
DB	Deadband
DC	Direct Current
DCA	Digital Command Assembly
DEDA	Data Entry and Display Assembly
DEGS	Degrees
DEPL	Depletion
DES	Descent
DET	Digital Event Timer
DIFF	Difference
DIR	Direct
DK	Docked
DO	Detailed Objective
DOI	Descent Orbit Insertion
DPS	Descent Propulsion System
DS	Documented Sample
DSE	Data Storage Equipment
DSKY	Display and Keyboard
DTO	Detailed Test Objective
DUA	Digital Uplink Assembly
DWN	Down

E	Erasable or Enter
ECS	Environmental Control System
ED	Explosive Device
EDT	Eastern Daylight Time
EFH	Earth Far Horizon
EI	Earth (atmosphere) Interface and Entry Interface
EL	Electric Hasselblad Camera
ELEV	Elevation
EMER	Emergency
EMS	Entry Monitor System
EMU	Extravehicular Mobility Unit
ENH	Earth Near Horizon
EPO	Earth Parking Orbit
EPHEM	EPHEMERIS
EPS	Electrical Power Subsystem
EQUIP	Equipment
EST	Eastern Standard Time
ETB	Equipment Transfer Bag
EVA	Extravehicular Activity
EVAP	Evaporator
EVCS	Extravehicular Communications System
EVT	Extravehicular Transfer
EXT	External
f	F Stop
FC	Fuel Cell
FDAI	Flight Director Attitude Indicator
FLT	Flight
FM	Frequency Modulated
FOV	Field of View
FPS or fps	Feet per second
FT or ft	Feet
FTO	Flight Test Objective
FTP	Full Throttle Position
FWD	Forward
G.A.	Gas Analysis
GA	Gimbal Angle
GBI	Grand Bahama Islands
GBM	Grand Bahama (MSFN)
GDC	Gyro Display Coupler
GDS	Goldstone, California
GET	Ground Elapsed Time
GETI	Ground Elapsed Time of Ignition
GLY	Glycol
GMT	Greenwich Mean Time
G&N	Guidance and Navigation
GNCS	Guidance Navigation Control System
GWM	Guam
GYM	Guaymas, Mexico

H2	Hydrogen
HA	Apogee Altitude
HAW	Hawaii
HBR	High Bit Rate (TLM)
HD	Highly Desirable
HGA	High Gain Antenna
HI	High
H2O	Water
HP	Perigee Altitude
HSK	Honeysuckle (Canberra, Australia)
HTC	Hand Tool Carrier
HTR	Heater
HTV	USNS Huntsville
ICDU	Inertial Coupling Data Unit
ID	Identification
IGA	Inner Gimbal Angle
IGN	Ignition
IMU	Inertial Measurement Unit
IND	Indicator
INIT	Initialization
INT	Intervalometer
IP	Initial Point
ISA	Interim Stowage Assembly
IU	Instrumentation Unit
IVC	Intervehicular Communications
IVT	Intravehicular Transfer
JETT	Jettison
KM	Kilometer
kwh	Kilowatt Hour
LA	Launch Azimuth
LAT	Latitude
LBR	Low Bit Rate (TLM)
LBS or lbs	Pounds
LCG	Liquid Cooled Garment
L/D	Lift/Drag
LD	Lunar Day (TV Lens)
LDG	Landing
LDMK	Landmark
LEB	Lower Equipment Bay
LEC	Lunar Equipment Conveyor
LEL	Lunar Surface Electric Hasselblad Camera
LFH	Lunar Far Horizon
LGC	LM Guidance Computer
LH	Left-hand
L/H	Local Horizontal
LHEB	Left-hand Equipment Bay

LHFEB	Left-hand Forward Equipment Bay
LHSSC	Left Hand Side Storage Container
LiOH	Lithium Hydroxide
LLM	Lunar Landing Mission
LLOS	Landmark Line of Sight
LM	Lunar Module
LMP	Lunar Module Pilot
LNH	Lunar Near Horizon
L/O	LIFT OFF
LOI	Lunar Orbit Insertion
LONG	Longitude
LOS	Loss of Signal or Loss of Site
LPO	Lunar Parking Orbit
LR	Landing Radar
LRRR or LR3	Laser Ranging Retro-Reflector
LS	Landing Site or Lunar Surface
LSM	Lunar Surface Magnetometer
LT	Light
LTG	Lighting
LV	Launch Vehicle
L/V	Local Vertical
LVPD	Launch Vehicle Pressure Display
M	Mandatory
MAD	Madrid, Spain
MAG	Magazine (Camera)
MAN	Manual
MAX	Maximum
MAX Q	Maximum Dynamic Pressure
MCC	Midcourse Correction
MCC-H or MCC	Mission Control Center - Houston
MDC	Main Display Console
MEAS	Measurement
MER	USNS Mercury
MESA	Modular Experiment Stowage Assembly
MET	Mission Event Timer
MGA	Middle Gimbal Angle
M/I	Minimum Impulse
MIN	Minimum
MIR	Mirror
MLA	Merrit Island, Florida
mm	Millimeter
MNVR	Maneuver
MON	Monitor
MPL	Mid Pacific Landing
MPS	Main Propulsion System
MSFN	Manned Space Flight Network
MTVC	Manual Thrust Vector Control

N2	Nitrogen
NAV	Navigation
NM	Nautical Miles
NOM	Nominal
NXX	Noun XX
O2	Oxygen
OBS	Observation
O/F	Oxidizer to Fuel Ratio
OGA	Outer Gimbal Angle
OMNI	Omnidirectional Antenna
OPR	Operate
OPS	Oxygen Purge System
OPT	Option
ORB	Orbital
ORDEAL	Orbit Rate Display Earth and Lunar
ORIENT	Orientation
OVBD	Overboard
OVHD	Overhead
P	Pitch or Program
PAD	Voice Update
PCM	Pulse Code Modulation
PC	Plane Change or Chamber Pressure
PDI	Powered Descent Initiation
PER	Pericynthian
PGA	Pressure Garment Assembly
PGNS	Primary Guidance Navigation Control Section
PHOTO	PHOTOGRAPH
PIPA	Pulse Integrating Pendulous Accelerometer
PKG	Package
PLSS	Portable Life Support Systems
PM	Phase Modulated
POL	Polarity or Polarizing
PRE	Pretoria, South Africa
PREF	Preferred
PREP	Preparation
PRESS	Pressure
PRIM	Primary
PRN	Pseudo Random Noise
PROP	Proportional
PRPLNT	Propellant
PSE	Passive Seismic Experiment
PSIA	Pounds per Square Inch Absolute
PSID	Pounds per Square Inch Differential
PSIG	Pounds per Square Inch Gage
PT	Point
PTC	Passive Thermal Control
PU	Propellant Utilization
PUGS	Propellant Utilization and Gaging System
PWR	Power
PXX	Program XX
PYRO	Pyrotechnic

Qty	Quantity
QUAD	Quadrant
R	Roll or Range
R&B	Red & Blue
RAD	Radiator, or Radial, or Radiation
RCDR	Recorder
RCS	Reaction Control System
RCU	Remote Control Unit
RCV	Receiver
REACQ	Reacquire
RED	USNS Redstone
REFSMMAT	Reference Stable Member Matrix
REG	Regulator
REQD	Required
REV	Revolution
RH	Right-hand
RING	Ringsite
RLS	Radius of Landing Site
RNDZ	Rendezvous
RNG	Range/Ranging
RR	Rendezvous Radar
RSI	Roll Stability Indicator
RT	Real Time
RTC	Real Time Command
RTG	Radioisotope Thermoelectric Generator
RXX	Routine XX
SA	Shaft Angle
S/C	Spacecraft
SCE	Signal Conditioning Equipment
SCS	Stabilization Control System
SCT	Scanning Telescope
SEC	Secondary
SECO	S-IVB Engine Cut-off
SECS	Sequential Events Control System
SEL	Select
SEP	Separate
SEQ	Sequence
SIDE	Suprathermal Ion Detector Experiment
S-IVB	Saturn IV B(Third Stage)
SLA	Service Module LM Adapter
SLOS	Star Line-of-Sight
SM	Service Module
SPOT	Spot Meter
SPS	Service Propulsion System
SR	Sunrise
SRC	Sample Return Container
SRX	S-Band Receiver Mode No. X

SS	Sunset
STX	S-Band Transmit Mode No. X
S.V.	State Vector
Sw	Switch
SWC	Solar Wind Composition
SWE	Solar Wind Experiment
SXT	Sextant
SYS	System
T EPHEM	Time of Ephemeris Update
TA	Trunnion Angle
TAN	Tananarive, Madagascar
TB	Time Base
TCA	Time of Closest Approach
TD	Touchdown
TD&E	Transposition Docking & LM Ejection
TEC	Trans Earth Coast
TECH	Technique
TEI	Tranearth Insertion
TEMP	Temperature
TERM	Terminate
TEX	Corpus Christi, Texas
TGT	Target
TIG	Time of Ignition
TLC	Trans Lunar Coast
TLI	Translunar Insertion
TLM or TM	Telemetry
TPF	Terminal Phase Final
TPI	Terminal Phase Initiation
TPM	Terminal Phase Midcourse
T/R	Transmitter/Receiver
TRANS	Translation
TRN	Trunion
TV	Television
TVC	Thrust Vector Control
TWR	Tower
ULL	Ullage
UMB	Umbilical
UNDK	Undock
US	United States
V	Velocity
VR	Resultant Velocity
VX	Velocity along the X-axis
VY	Velocity along the Y-axis
VZ	Velocity along the Z-axis

VAN	USNS Vanguard
VHF	Very High Frequency
VLV	Valve
VOX	Voice Keying
VXX	Verb XX
W/O	Without
WRT	With Respect to
WTN	USNS Watertown
X	Time of Closest Approach (Symbol)
X-DOT	Rate of Change along the X axis
XFER	Transfer
XMIT	Transmit or Transmitter
XPONDER	Transponder
Y	Yaw
YDOT	Rate of Change along the Y axis
ZDOT	Rate of Change along the Z axis
Δ Az	Azimuth Change (Difference)
Δ H	Altitude Change (Difference)
Δ P	Pressure Change (Difference)
Δ R	Position Change (Difference)
Δ V	Velocity Change (Difference)
Δ VC	Velocity Change at Engine Cutoff

Photographic Nomenclature

AAA/BBB/CCC/DDD - EEE, EEE, (GGG, HHH, III) JJJ

AAA - Location from which photography is to be accomplished

BBB - Camera

CCC - Lens

DDD - Film Type

EEE - Photography aids (i.e., brackets, intervalometer,
Mirror etc.)

GGG - Lens Aperture Setting

HHH - Shutter Speed

III - Focus distance in feet

JJJ - Number of frames for EL & LEL cameras
Frame Rate
Magazine percent
T Time (minutes)
Operating time (minutes) for TV

SYMBOL NOMENCLATURE

